

REMARKS

Claims 1-10, all the claims pending in the application, stand rejected. Claims 4, 6 and 8-10 are cancelled. Claims 1, 3, 5 and 7 are amended.

Claim Rejection - 35 U.S.C. § 102

Claims 1-4 and 8-10 are rejected under 35 U.S.C. § 102(b) as being known from Fekete (U. S. Patent No. 4,987,400). As you point out in your letter of November 23, 2004, it appears that the invention can be distinguished from Fekete by the structure of the integrated Hall element of FIGS. 8-10.

Claims 1-7, 9, and 10 are rejected under 35 U.S.C. § 102(b) as being known from Kogure et al. (JP 2001-356040). As seen from FIG. 10, the sensor part of Kogure is not fluid tight, so that fuel enters the chamber of the Hall element 21 from a clearance between the shaft 12A and the slide shank 16A and magnet 17. Please note that the magnet 16 is not accommodated in the sensor casing 3 in the present invention.

Claim Rejections - 35 U.S.C. § 102

Claims 1-4 and 8-10 are rejected under 35 U.S.C. § 102(b) as being anticipated by Fekete (4,987,400). This rejection is traversed for at least the following reasons.

With regard to claims 4 and 8-10, the rejection is moot in view of the cancellation of the claims.

With respect to claims 1-3, the focus of the claims is a system for detecting the level of liquid in a tank comprising a float, a sensor for detecting displacement of the float and a casing arranged in the tank isolated from the liquid, for accommodating the sensor. As illustrated in Fig. 1, float 12 couples to sensor 11, which is disposed in the casing 3, within a structure comprising a chamber 4 and a lid 2, the casing being disposed within the lid portion 2b. Claim 1 has been amended to define the sensor part as comprising a circuit board and a Hall IC that is mechanically and electrically coupled to the circuit board for detecting liquid level.

The rejected claims further include a recitation of a magnet (claim 2) and a non-contact coupling between the float and sensor with the Hall IC and magnet (claim 3).

Fekete

The patent to Fekete is directed to a variable resistance gauge, as illustrated in Fig. 3, that is coupled to a rotatable shaft 62 having at one end a magnet 64 and its other end a float arm 56 which ends in a float (not shown) as explained at col. 3, lines 2-68. Movement of the arm 56 in a response to variation of a liquid level detected by the float is conveyed to magnet 64, which is magnetically coupled to a magnet 114 within the gauge 50. Rotation of the shaft 62 about axis 76 causes the internal mechanism of the gauge 52 to rotate about axis 92. The gauge is formed of a plastic cap 88 and base 70, which are hermetically sealed, thereby providing a non-contact coupling between the float and sensor.

Fekete differs from the present invention on the basis of the details of the sensor, as illustrated in Fig. 3 of the present application. There, arm 13, which has at one end a float 12 and at the other end a magnet 16, is rotatable. The resulting rotational movement of the magnet 16 is detected by a Hall element 21, which is disposed between arms 19, 20 of a yoke, as illustrated in Figs 3-5. The Examiner recognizes this distinction and does not reject claims 5-7, which are directed to this feature.

In order to distinguish the invention from Fekete, Applicant has amended claim 1 to define the invention as relying on the integrated Hall element of Figs. 8-10.

Claims 1-7, 9 and 10 are rejected under 35 U.S.C. § 102(b) as being anticipated by Kogure et al (JP 2001-35040 A). This rejection is traversed for at least the following reasons.

With regard to claims 4, 6 and 8-10, the rejection is moot in view of the cancellation of the claims.

With regard to claims 1-3, 5 and 7, the Examiner asserts that Kogure teaches a similar structure to that which is claimed, including a fuel gauge 11 with an arm 12, float 13 and level detector 14 having a magnet that rotates with the arm 12. The Examiner also finds first and second yokes opposite to the magnet and a Hall element between the first and second yokes, as illustrated in Figs. 2 and 3. Details of the structure of the magnet and yokes are asserted to be presented in the illustrations in Figs. 4-10 of Kogure.

Amendment under 37 C.F.R. § 1.111
Application No. 10/750,972

A structure that is not found in the reference concerns the use of an integrated Hall detector (claimed as a "Hall IC"), as taught in Figs. 8-10 of the present application. This structure 42, which may be affixed to the circuit board 43, represents a patentable difference over the prior art. Moreover, as seen from FIG. 10, the sensor part of Kogure is not fluid tight, so that fuel enters the chamber of the Hall element 21 from a clearance between the shaft 12A and the slide shank 16A and magnet 17. By contrast, Applicant's sensor part is in a casing that is expressly stated to be "isolated from the liquid;" only the magnet 16 is not accommodated in the sensor casing 3 at all in the present invention.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

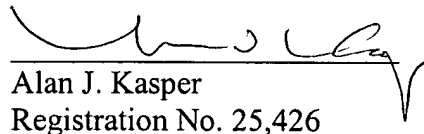
SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Respectfully submitted,


Alan J. Kasper
Registration No. 25,426

Date: February 3, 2005